

How Tense and Aspect are acquired: a cross-linguistic analysis of child Russian and English

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1. Introduction

This study examines the production of verb morphology by children acquiring two typologically different languages – Russian and English. My interest for studying the emergence of verb morphology in Russian and English originates from one particular finding of the acquisition research, namely the correlation between aspect, tense, and *Aktionsart* in child languages. In many languages, including English (cf. Antinucci & Miller 1976, Shirai & Andersen 1995), Russian (Stoll 1998, Gagarina 2000), Chinese (Li & Bowerman 1998), German (Behrens 1993), etc., a strong correlation has been observed in the use of the resultative *Aktionsart* (telic types of verbs: achievements and accomplishments) and the perfective aspect in the past tense, on the one hand, and between the non-resultative *Aktionsart* (atelic verbs: activities, states and semelfactives) and the imperfective aspect in the present tense, on the other.

To explain these similar acquisition processes across so many different languages, researchers have proposed three main hypotheses about language acquisition: the Cognition hypothesis, the Semantic Predisposition hypothesis and the Language Specificity hypothesis. The Cognition hypothesis (Antinucci & Miller 1976, Bloom, Lifter & Hafitz 1980, Bloom & Harner 1989) tries to account for the correlation between *Aktionsarten* and verb forms used in the speech of children in terms of cognitive constraints. The Semantic Predisposition hypothesis and the Prototype Theory (Rosch 1975, Slobin 1985, Li & Shirai 2000) claim that children initially restrict particular tense-aspect forms to particular lexical aspects of verbs because they are sensitive to only the most frequent or salient associations (prototypes) in the input. Finally, the Language Specificity hypothesis (Bowerman 1985, Behrens 1993, 2001) emphasizes children's productive analyses of the form-function patterns of the target language. Proponents of the Language Specificity hypothesis try to explore the role of the morphological and syntactic systems of a particular language in the acquisition of tense and aspect markers. Clearly, at some point all these three factors (*Aktionsart*, morphology, and cognition) take part in the acquisition of tense and aspect in one way or another. However, what this study aims at finding out, is which of these factors plays a crucial role in tense and aspect

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acquisition at the very earliest stage, i.e. when the first finite verbs begin to appear in a child's production. For that reason, in this study I have decided to focus on the data from children under the age of two.

The article is structured as follows. In 2, I present the methodology behind my analysis. In 3, I formulate predictions of the three existing hypotheses of tense and aspect acquisition. Part 4 presents evidence for and/or against the three hypotheses of tense and aspect acquisition in order to find out which of these hypotheses can best account for our cross-linguistic data. Finally, conclusions are presented in 5.

2. Methodology

The present study used data from the CHILDES database (Child Language Data Exchange System, MacWhinney & Snow 1990). The Russian data chosen for the analysis is that of a monolingual Russian child, Varvara (1;6.5 – 1;8.24). Varvara's data were collected by Protassova (1988). The English data produced by Eve (1;7 – 1;9) are from Brown's longitudinal corpus (Brown 1973).

Both Eve and Varvara are linguistically precocious children. The age of the two children in the files selected for this study is shown below:

Varvara file 1: age 1;6.5	Eve file 3: age 1;7.0
Varvara file 2: age 1;7.13	Eve file 4: age 1;7.0
Varvara file 3a: age 1;8.24	Eve file 5: age 1;8.0
Varvara file 3b: age 1;8.24	Eve file 6: age 1;9.0

The total number of verbs analysed is 245 from Varvara's data and 193 from Eve's data.

Selection of the relevant files was not based on the similarity in age of the two girls, but on the similar PLU (Predominant Length of Utterance) stages of the two children (Vainikka, Legendre & Todorova 1999).

Coding of the data was performed in the CLAN programme. All the child's sentences containing verbs (either root infinitives (RI), finite forms or ambiguous forms) were coded for the following linguistic variables:

- a) finiteness¹,
- b) type of verb (or inherent aspect, see the classification below),
- c) temporal reference (agreeing or non-agreeing present, past, and future),
- d) grammatical aspect (perfective, imperfective, progressive (for English only)),
- e) presence or absence of an auxiliary,
- f) type of subject (pronominal, lexical, or null)².

In this analysis I follow one of the recent classifications of verbs given by Saeed (1997), which is summarized in Table 1. This classification is based on situation types, such as stativity (when the situation is described as an unchanging state, durativity (or non-punctuality) and telicity³. Situation aspect (or inherent lexical aspect) refers to characteristics inherent in the lexical items, which describe the situation.

Table 1. Verb classification, taken from Saeed (1997)

Situation type	Stative	Durative	Telic
State, e.g. <i>know, love, hate</i>	+	+	n.a.
Activity, e.g. <i>play, run, dance</i>	-	+	-
Accomplishment, e.g. <i>run a mile</i>	-	+	+
Semelfactive, e.g. <i>knock, tap</i>	-	-	-
Achievement, e.g. <i>win, reach</i>	-	-	+

The class of semelfactive verbs in Russian is often further subdivided into delimitatives and ingressives (inter alia Stoll 1998).

Delimitative verbs imply semelfactive events which take place for a while, e.g. *pochitatj* 'to read for a certain while.' The delimitative type of verbs is marked by the prefix *po-*.

Ingressive verbs denote a punctual beginning of an event. These verbs are marked by the prefixes *za-* and *po-*: e.g. *zapetj* 'to start singing,' *pojehatj* 'to start driving.'

The group of telic verbs (accomplishments and achievements) is the only Aktionsart group in Russian in which the morphology is completely independent of Aktionsart (Stoll 1998). For instance, the semelfactive Aktionsart coincides with the suffix type of verb morphology (e.g. the

¹ Non-finiteness corresponds to RIs.

² Wh-words were treated as pronominal subjects.

³ Telic events have a clear result and are often referred to as resultatives, whereas atelic events emphasize a process rather than a result.

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suffix *-nu-* in verbs like *pryg-nu-tj* [jump.pfv.inf.] ‘to jump once’). The delimitative and ingressive Aktionsarten are congruent with the prefixed verbs that do not have an imperfective partner with secondary imperfectivization, like *za-plak-atj* [pfv.cry.inf.] ‘to start crying’ and *po-sto-jatj* [pfv.stand.inf.] ‘stand for a while.’ The only Aktionsart that includes several morphological markers is the telic one, which includes verbs like *na-pis-atj* [up.write.inf.] ‘to write up something’ (empty prefix⁴) or *na-litj* [on.pour.inf.] ‘to fill’ (prefix and secondary imperfectivization⁵). Thus, in order to test whether morphological markers play a role in the acquisition process, we analyse the telic verbs separately from all the other verb types.

3. Predictions of the three hypotheses of tense and aspect acquisition

Table 2 presents a summary of predictions of the three hypotheses of tense and aspect acquisition followed by an explanation of each prediction in more detail.

Table 2. Predictions of the three hypotheses (H1 – Cognition hypothesis, H2 – Semantic Predisposition hypothesis, H3 – Language Specificity hypothesis)

Predictions:	H1	H2	H3
1. early reference to non-result. past and non-immediate future events before the appearance of morphology	-	+	+
2. aspectual distinctions acquired prior to tense distinctions in both languages (first past tenses used with result. verbs only)	+	+	-
3. <i>processes</i> are marked differently from <i>states</i> in both languages	+	-	-
4. <i>processes</i> are marked differently from <i>results</i> and telic (punctual) events are marked differently from atelic (non-punctual) events	+	+	+
5. earlier appearance of aspectual markers in Russian than in English through Transparency Principle	+	-	+
6. target-like usage of forms	-	-	+
7. RIs’ aspectual and temporal reference is similar across the two languages	+	+	-

⁴ Prefixes which do not have any transparent meaning but only yield perfectivity, are referred to as “empty prefixes” (Stoll 1998:356).

⁵ E.g. *l-itj* *na-l-itj* *na-l-iv-atj*
pour.inf. *on.pour.inf.* *on.pour.ipfv.inf.*

1. Early reference to non-resultative past and non-immediate future events is predicted both by the Semantic Predisposition and the Language Specificity hypotheses, but is disallowed according to the Cognition hypothesis. A child does not know about past and future before her brain has matured enough to enable her to project past and future eventualities which are independent of the present context.

2. According to the Cognition hypothesis, aspectual distinctions are acquired prior to tense distinctions, and knowledge of these distinctions (*process-state-result*) possibly triggers the acquisition of tense. The same priority for the acquisition of aspect is assumed by the Semantic Predisposition hypothesis, based on the observation that first past tenses occur predominantly with resultative verbs. This hypothesis assumes that *result* is particularly salient to children. The Language Specificity proponents claim that this prediction does not hold true for all existing languages. Although it is believed to be true for English (cf. Antinucci & Miller 1976, Bloom, Lifter & Hafitz 1980, Bloom & Harner 1989), there is evidence from other languages against the aspect-before-tense acquisition (e.g. in Russian – cf. Bar-Shalom & Snyder 2002).

3. The Cognition hypothesis predicts that *states* should be marked differently from *processes* in child language. The Semantic Predisposition hypothesis does not make such a prediction at all. According to the Language Specificity hypothesis, this prediction should hold true for child English but not for child Russian. As in adult English *states* are marked differently from *processes*⁶, the same is expected to be observed in child English. In Russian this distinction between *states* and *processes* is not morphologically marked, hence it should not be marked in child Russian either. The following examples show that both the state verb *ljubitj* ‘to love’ and the activity verb *sidetj* ‘to sit’ have the same ending *-it* in present tense:

- (1) Masha ljub-it leto.
 Masha love.pres.3sg. summer.acc.
 ‘Masha loves summer.’
- (2) Masha sid-it v park-e.
 Masha sit.pres.3sg. in park.prop.
 ‘Masha is sitting in the park.’

4. The Semantic Predisposition hypothesis predicts that *processes* should be marked differently from *results*. Similar prediction can be

⁶ E.g. *Mary love-s John* (state) vs. *Mary is think-ing* (process).

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made with respect to the Language Specificity account, which assumes input-based learning. Since this pattern is true for both adult Russian and adult English, it should also be observed in the speech of Russian and English children.

All three hypotheses predict that telic (punctual) events should be marked differently from atelic (non-punctual) events. However, they have a different explanation for this prediction. According to the Cognition hypothesis, distinctions between these types of events are biologically programmed in a human being and thus emerge early in language acquisition. According to the Semantic Predisposition hypothesis, these distinctions are available to a child from the onset as they are part of UG. In English and Russian, these types are marked differently in the adult language and thus in accordance with the third hypothesis, the same should be observed in the child data.

5. Prediction 5 is based on the Transparency Principle of learning. It predicts earlier appearance of aspectual markers in Russian than in English. According to the Transparency Principle of learning (cf. van Hout 1998:399),

If acquisition involves finding the mappings between particular cognitive notions and their linguistic encodings, possibly mediated by UG defined morpho-syntactic features, then learning should be easier for overt and unambiguous mappings (one-to-one) than for covert and/or conflated ones (many-to-one).

The aspectual property of a Russian verb is marked on the verb itself (by suffixation and/or prefixation). In English, on the contrary, a telic/atelic reading depends on the composition of properties of the verb and its object (cf. Slabakova 1997, 1998). The acquisition of aspect in Russian is more complex with respect to morphology (and consequently, phonology), since marking a verb for a particular grammatical aspect (perfective or imperfective) requires suffixation and/or prefixation. At the same time, in this way it appears to be more salient, and thus easier to be acquired. Consider for example (3) to (5):

(3) Misha pjot.

Misha drink.pres.ipfv.3sg.

‘Misha is drinking/drinks.’

(4) Misha vy-pjet.

Misha pfv.fut.drink.3sg.

‘Misha will drink up.’

(5) Misha vy-pi-va-et.

Misha pfv.drink.ipfv.pres.3sg.

‘Misha is drinking/drinks a little/sometimes’.

In example (3), an imperfective simple present form of the verb *pitj* ‘to drink’ is used to refer to a habitual event or an event in progress. In (4) a perfective form is built by adding a resultative prefix *vy-*. By means of secondary imperfectivization another imperfective form of the same verb can be built by adding the suffix *-va-* as in (5).

In English acquiring aspect is more difficult with respect to semantics and the syntactic structure of VP, as it has to do with telicity. Telicity, in its turn, depends on the cardinality/non-cardinality of direct object, absence or presence of resultative particles. Consider examples (6) to (8):

(6) John drank juice (for hours). (atelic)

(7) John drank a glass of juice (in a minute). (telic)

(8) John drank up his juice. (telic)

In (6), atelic reading is achieved by the use of a non-cardinal object (*juice*). In example (7), the object is cardinal, thus the event described by the predicate is telic. In (8), telicity of the event is achieved by the use of the resultative particle *up*.

English perfective aspect is realised by simple past and perfect forms, whereas imperfective (or progressive) aspect is realised by the addition of *-ing* to the stem of the lexical verb and a progressive auxiliary *be*. The examples given below show how telicity interacts with grammatical aspect in English. Examples (9) to (12) are variants of sentence (8) above:

(9) John drank up his juice in an hour/*for an hour.

(10) John has drunk up his juice in an hour/*for an hour.

(11) John was drinking up his juice *in an hour/*for an hour/when I came.

(12) John has been drinking up his juice for an hour already.

In examples (9) to (12), the aspectual situation is modified by the use of time adverbials *in an hour* and *for an hour*. In (9), perfective aspect is realised by the use of simple past. The resultative particle *up* yields telicity and is fine in combination with *in an hour*, but not with *for an hour*. The same is true for (10), where the perfect form is used.

Sentence (11) is grammatical when used to refer to a single point in the past (i.e. *when I came*) but is impossible with either of the two time adverbials. It is ungrammatical with *in an hour*, as this time expression implies completion of an event and thus cannot be used when the progressive form is employed. (11) cannot be used with *for an hour* either. The latter implies duration, whereas past progressive of the resultative verb *drink up* is used to refer to a single point of the event. Finally, sentence (12) employs the present perfect progressive. It is grammatical with *for an hour*, as both the adverbial and the perfect progressive express duration of an event.

According to van Hout (2002), the first verbs that bear aspectual markers occur earlier in Russian child data compared to English child data, as the acquisition of English aspect involves more mechanisms and is thus harder for children. It can be suggested that acquisition of English aspect takes more time and possibly requires a higher MLU since it involves a direct object, than the acquisition of aspect in Russian. In this respect language-specific learning (based on different morphological, syntactic and semantic systems of the two languages) does not contradict the Cognition hypothesis which relies on the cognitive abilities of the child acquiring a language. However, if our data appears to corroborate this prediction, it would point to the possibility that acquiring a language is not a purely cognitive development. The Transparency Principle unifies the Cognition and the Language Specificity hypotheses. It takes into account cognitive abilities of a child learning a language together with the properties of the language being learned. At the same time it follows from the formulation of this principle that it admits the possibility that UG defines the morpho-syntax of various linguistic encodings. However, the predictions of the Semantic Predisposition hypothesis do not directly follow from the Transparency Principle, thus we assume that the Semantic Predisposition hypothesis does not predict earlier appearance of aspectual markers in Russian than in English.

6. Target-like usage of forms at an early stage is predicted only by the Language Specificity hypothesis.

7. Aspectual and temporal reference of RIs is expected to be different in the two languages, following the Language Specificity hypothesis. This difference has to do with the different nature of RIs in Russian and English. Giorgi & Pianesi (1997) claim that the English bare verb is not a true morphological infinitive and is inherently perfective, as compared to e.g. Dutch, Greek, and Russian (cf. Hyams 2000). This perfectivity of the English verb is semantically incompatible with a present tense perceptual report (example (13)), but compatible with the

past tense report (as (14) demonstrates (these examples are taken from Hyams 2000:397):

(13) *I see John cross the street.

(14) I saw John cross the street.

So the Eventivity Constraint formulated in A and the Modal Reference Effect (MRE) formulated in B below, apply to Russian infinitives, but not to English bare forms:

A. RIs are restricted to event-denoting predicates (cf. Hyams 2000:393).

B. With overwhelming frequency, RIs have modal interpretations (cf. Hyams 2000:394).

Thus we would expect that in child Russian, RIs will occur almost exclusively with eventive verbs, as opposed to RIs in child English. Based on Ud Deen (1997), the English-speaking children Adam and Eve (CHILDES, Brown's corpora) produced bare forms of non-eventive verbs a considerable number of times (25% of all occurrences of non-finite forms), as in (15):

(15) Becky have puzzle.

(Eve 1;8, file 5)

Van Gelderen and Van der Meulen (1998) find that 98% of Varja's (CHILDES, Russian data collected by Protassova) RIs are eventive, as in (16):

(16) Ainjka kupatja (=Varenjka kupatjsja) (Varvara 1;6.5, file 1)

Varenjka bathe.inf.ipfv.

'Varenjka to bathe.'

(intended sentence: 'Varenjka wants/ is going to bathe.')

Both observations are in favour of the Language Specificity hypothesis. If the English bare verb is indeed inherently perfective, we would expect that English children's RIs will have past time reference (in addition to other temporal references), whereas Russian children's RIs will almost exclusively be used with reference to future, as they should obey the MRE constraint.

4. Evidence for and/or against the three hypotheses of tense and aspect acquisition

4.1. The Cognition Hypothesis

According to the Cognition hypothesis, acquisition of such grammatical categories as tense and aspect is constrained by the cognitive development of the child. Proponents of this hypothesis argue that children before the age of two can only use past tense markers when talking about events that resulted in a present state, because they have not yet developed a representation of the past which is independent of the present context. The same is expected to be true for future reference: only non-immediate and not remote future should be referred to before the age of two.

The Cognition hypothesis can be rejected if predictions 1 and 6 in table 2 (cf. section 3) turn out to be borne out by the data.

Prediction 1 requires that with respect to past and future, reference to non-resultative past and non-immediate future should occur in early child data before the appearance of morphological markers. In Varvara's data, no reference to past occurs in root infinitives. With respect to future reference, mostly immediate future (modality) is expressed by Varvara's RIs, as in example (17):

- (17) Pi-tj (Varvara 1;6.5, file 1)
drink.inf.ipfv.
'to drink'
(Intended sentence: 'I (will) want to drink.')

However, non-immediate future reference occurs as well, as in (18):

- (18) Padaatj (=pozdravlja-tj) batatenjku. (Varvara 1;7.1, file 2)
congratulate.ipfv.inf. little.batata
'to wish a happy birthday to little batata (child word)'

The context in which (18) is pronounced suggests that the child refers to the event of wishing a happy birthday to her aunt which will happen on the same day when she said it. However, it is a non-immediate future event that will happen later during that day. It is worth mentioning that (18) is the only example of remote future reference in Varvara's four files (1 to 3b). In addition, the sentence in (18) was used by Varvara at a stage when also finite forms occurred quite frequently in her speech. That is why this evidence cannot be used to reject the Cognition hypothesis.

In Eve's non-finite sentences, reference to resultative past events with a clear end-point is predominant. However, non-immediate past reference occurs in the following two sentences:

- (19) Eve ride tink xxx party yesterday. (Eve 1;9.0, file 6)
 (20) Baby sneeze/yesterday at the party/. (Eve 1;9.0, file 6)

It is noteworthy that Eve's production of finite morphology at this stage was not productive at all. There are no instances of the use of the third person singular ending *-s* in the present tense and the past forms used are very few and could have been learned by rote. That is why we can claim that Eve does refer to non-immediate past before the use of morphological markers. Future reference in Eve's bare verb forms (in files 3 to 6) is always made to immediate future events, and never to remote future eventualities.

The two examples of non-immediate reference from Eve's data given above support prediction 1, i.e. that reference to non-resultative past does occur (although only in a limited number of utterances) in early child data before the appearance of morphological markers. Thus evidence obtained with respect to prediction 1 does not support the Cognition hypothesis. On the other hand, it supports both the Semantic Predisposition and the Language Specificity hypotheses.

Prediction 6 requires target-like usage of forms. If this prediction is borne out, the Cognition hypothesis can be rejected. Moreover, if borne out, this prediction is evidence in favour of the Language Specificity hypothesis alone. Thus the Semantic Predisposition hypothesis can also be rejected, especially if no other evidence in its favour is present in the data.

Both Varvara's and Eve's data contain evidence in favour of this prediction. It was observed that the perfective aspect is almost never used with present forms in Varvara's data. This non-use is target-like, as Russian disallows perfective forms used in the present tense. Apart from five errors of substitution, Varvara's finite verb forms are correct, e.g. agreement is present in her utterances in cases where it is necessary in adult Russian.

However, the use of finite forms by Varvara is not completely flawless. As illustrated in example (21) below, cases of the use of perfective aspect and future form with reference to present do occur in Varvara's data, e.g.:

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(21) Pymitjot (=pod-met-jot). (Varvara 1;8.2, file 3b)

pfv.sweep.3sg.

‘He/she will sweep (the floor).’

Intended sentence: Pod-met-a-jet.

pfv.sweep.ipfv.3sg.

‘He/she is sweeping (the floor).’

Among other cases of incorrect use of finite forms by Varvara we observed the use of a perfective form followed by an imperfective auxiliary-like form (example (22)), which is not possible in adult Russian, the use of an incorrect future form (as in (23)), the use of the wrong past form (24) as well as the use of the copula *budet* ‘will’ with a perfective form of a lexical verb (25) that is disallowed in adult Russian. The number of the incorrectly used finite forms is very small compared to the use of correct forms (only 5 incorrect finite forms (described above) of the total of 201 finite verbs in Varvara’s data). That allows us to conclude that on the whole, Varvara’s finite forms are target-like.

(22) Ot’rezhu delaj-u. (Varvara 1;8.2, file 3b)

cut.pfv.1sg. do.ipfv.1sg.

‘(I) will cut off (I) am doing.’

Intended sentence: Otre’zaju.

cut.ipfv.1sg.

‘I am cutting off.’

(23) Jozyk (=jozhik) upait (=u-padj-ot). (Varvara 1;6.5, file 1)

hedghog pfv.fall.3sg.

‘Hedgehog will fall.’

(24) Nade-l-a slona. (Varvara 1;8.2, file 3b)

put.on.pfv.past.fem elephant.acc.

‘(I) have dressed (the) elephant.’

Intended sentence: Ode-l-a slona.

put.on.pfv.past.fem. elephant.acc.

‘(I) have dressed (the) elephant.’

(25) Kutiku (=kurtochku) nade-tj budet (=nadenet) (Varvara 1;6.5, file 1)

coat.acc. put.on.pfv.inf. will

‘Will to.put on (the) coat.’

Intended sentence: Kurtochku nadenet.

coat.acc. put.on.pfv.3sg.

‘Will put on (the) coat.’

When Eve uses finite forms, she almost always uses them correctly. However, the instances of this use are very few and could be accidentally correct. Examples of an incorrect use of finite forms are those in which Eve overgeneralizes the past ending *-ed* using it with irregular verbs. However, this type of error shows Eve's productive analysis of the form-function patterns present in the language of her caretakers. In addition to this type of error, we encountered one instance of the use of the auxiliary *do* instead of *be* before the *-ing* form of the lexical verb.

For RIs, it was shown that although these forms may seem to be errors at first sight, they are perfectly grammatical in adult languages. Constructions with RIs can be found in the so-called "Princess sentences"⁷ in adult Russian, in English Mad Magazine sentences as well as in English newspaper headlines. Although in our child data these constructions are used in contexts that differ from the adult contexts (especially, newspaper headlines), children's errors are not in the use of these forms as such but in the choice of the appropriate contexts for these forms.

The analysis of errors shows that omission of subjects occurs both in Varvara's and Eve's data. It is allowed for Russian, but not for English, a non-pro-drop language. It is not completely clear what causes null-subjects in child English. For V-raising languages it was proposed that null subjects co-occur with the root-infinitival stage (cf. Phillips 1995 for this and other proposals). In our English data, null-subjects occur only with non-finite forms. However, it was shown that this is not the case for other child English data. Phillips analysed all files in Adam and Eve's corpora and found that null subjects occur with finite as well as non-finite verbs. Besides, Phillips found that not only null-subjects, but also lexical subjects occur with non-finite forms in child English. It was argued (e.g. Wexler 1992) that English children's bare stem verb forms are different from RIs that occur in child Russian, Greek, French, German, and Dutch. Phillips argues that there is no finiteness/null subject correspondence in child English, "because finiteness has no effect on verb position, and therefore verb position cannot be a crucial factor in the licensing of overt subjects in English" (Phillips 1995:29).

Whether the phenomenon of subject-omission is due to non-adult competence or performance difficulties, its existence in child English is non-target-like.

⁷ Tut tsarevna hohota-tj.
here Princess laugh.inf.

'The Princess started to laugh.' (from Avrutin 1997)

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Omission of objects occurs in both the Russian and the English child data and is considered to be an error in English. Russian, however, does allow for object omission in certain contexts. In Russian, if the object is a topic with a strong link to the previous context, the object can be missing, since Russian allows for topic drop. Although this type of omission is not allowed in English, it is not an error in the use of inflection that is language-specific. Errors of substitution mentioned above in this section, are indeed very few.

4.2. *The Semantic Predisposition Hypothesis*

The Semantic Predisposition hypothesis assumes some innate knowledge of meanings. The task of the child, according to this hypothesis, is to look for the morphemes available in the language to encode these meanings with.

To see if our data can reject the Semantic Predisposition hypothesis, we need to find out whether predictions 3 and 5 (cf. table 2 in section 3) are borne out. Prediction 6 could also be used to reject this hypothesis. As we just saw for the Cognition hypothesis, this prediction is borne out for most of the data. The number of errors in the use of finite morphology is insignificant compared to the correct uses: only 5 errors of substitution (of the total of 201 finite sentences) occur in Varvara's data and 3 errors in Eve's data (of 19 finite sentences). In the two of these 3 errors produced by Eve, she uses *-ed* with irregular verbs which shows her productive analysis of the form-function pattern typical for English. Thus prediction 6 is borne out by the data and can not be used to support the Semantic Predisposition hypothesis.

Prediction 3 requires that *processes* should be marked differently from *states* (cf. table 2). Initially, this difference in the choice of markers for processes versus states was suggested by Bickerton (1981) for child English. Indeed, in Eve's files 3 to 6, stative verbs are never marked with the progressive marker *-ing*, which often occurs with activity verbs that denote processes. Thus, prediction 3 is supported by our English child data. However, if children have innate knowledge that constrains their formulation of linguistic rules, it would be natural to expect similarities in the acquisition of these rules by children learning different languages. Innateness is what the Semantic Predisposition hypothesis argues for. That is why we would expect that the same distinction in the use of morphological markers with states and processes that is present in Eve's data should also be in Varvara's data.

Examination of Varvara's production in files 1 to 3b does not allow us to confirm this prediction. States and processes are used with the

same morphological markers in her data. This use is not surprising, as adult Russian does not make such a distinction for these two types of eventualities. On the other hand, the difference in the choice of markers for processes versus states by Eve suggests her productive analysis of the input, since states are marked differently from processes in adult English.

Prediction 5 is borne out if aspectual markers appear earlier in Russian than in English through the Transparency Principle (cf. section 3).

It follows from the Transparency Principle that aspectual morphology will appear earlier in child Russian than in child English, as the acquisition of English aspect involves more mechanisms and is harder for children.

The results of this analysis suggest that Varvara uses the whole range of aspectual morphology in her speech. At the same time, Eve's use of aspectual markers cannot be called productive. In sentences where the *-ing* form of the verb occurs, auxiliaries are always missing. Absence of auxiliaries is also observed with respect to the perfect forms, i.e., past participles are used without auxiliaries preceding them.

If we assume that English aspect relies on telicity (following van Hout 1998, 2002), then Eve's imperfect use of aspect may have to do with the incomplete knowledge of how (a)telicity is expressed in English. The analysis of Eve's data showed that she lacks knowledge about cardinality/non-cardinality of direct objects at the age of 1;7 to 1;9 (files 3 – 6), based on the observations that Eve:

- a) omits direct objects (DOs);
- b) fails to properly quantize DOs (i.e. she omits articles, or uses indefinite articles in contexts where definite articles should be used);
- c) uses a single form of the DO in contexts where the plural form should be used.

In addition, it was observed that Eve uses resultative particles with non-finite verbs only and never with finite verbs.

In order to explain why affixes (prefixes and suffixes) in Russian are acquired earlier than auxiliaries in English, we suggest the following two reasons. First of all, the acquisition of aspectual morphology is more complex syntactically in English than in Russian (cf. Slabakova 1997, 1998). The +telic feature is on the verb itself in Russian (by means of a prefix). In English, this feature is situated lower down the syntactic tree and its value depends on the cardinality of object. Thus the expression of

aspect in English involves more mechanisms than in Russian. Secondly, the English aspect requires a higher MLU. In Russian, a prefix is part of the verb itself, whereas in English, the expression of aspect often requires the use of an auxiliary and an article (e.g. an indefinite article that denotes the cardinality of object).

As prediction 5 holds true for our data, it provides evidence against the Semantic Predisposition hypothesis (and in favour of the Language Specificity hypothesis). The Transparency Principle that underlies prediction 5 admits the possibility that UG defines the morpho-syntax of various linguistic encodings. However, it does not imply that the evidence obtained with respect to prediction 5 supports the Semantic Predisposition hypothesis. The different rates of the acquisition of temporal and aspectual markers by Russian and English children are best explained in terms of language specificity.

In addition, since prediction 5 is borne out, it cannot be used to rule out the Cognition hypothesis, as it relies on cognitive abilities of the child acquiring the morphology that is specific for a particular language. However, other evidence discussed above in 4.1. suggests that the Cognition hypothesis can be rejected.

To recapitulate so far, predictions 3 and 5 are borne out by our data and in this way present evidence against the Semantic Predisposition hypothesis.

4.3. The Language Specificity Hypothesis

The Language Specificity hypothesis argues for the acquisition of temporal and aspectual markers based on the specificity of morphology in the language being acquired. In order to be able to reject this hypothesis, predictions 2 and 7 must be borne out.

According to prediction 2, aspectual distinctions are acquired prior to tense distinctions in all languages and specifically, it predicts that first past tenses should be used with resultative verbs only. This prediction is not supported by our Russian and English child data. Our analysis of Varvara's production of finite temporal morphology showed that most of the past forms occur with achievement verbs (20 achievements and 1 accomplishment verb), however, 5 activities, 2 stative verbs, and 7 semelfactives are encoded for past as well. Thus the number of resultative verbs encoded for past (21) in Varvara's data is not significantly higher than the number of non-resultative verbs used in the past form (14). Also in Eve's data (at the stage when she does not use verb morphology productively) we encountered the use of the past-tense ending *-ed* with a stative verb as well as the use of the irregular form of

the verb with an activity verb, although most of the past forms in her data are represented by the irregular past forms of the achievement type (8 tokens). These data allow us to conclude that past tense markers are not used with resultative verbs only at this early stage of acquisition.

Prediction 7 requires that the aspectual and temporal reference of RIs should be similar across the two languages. Prediction 7 is not borne out by our data. Our analysis showed that although both Varvara and Eve use non-finite forms in their speech production, the number and the temporal reference of these forms vary significantly. The predominant number of finite forms as compared to non-finite ones in Varvara's production versus the predominant number of non-finite forms in Eve's data suggest that Varvara and Eve acquire finiteness and aspect at different rates. We have shown that these different rates are not due to differences in their cognitive development. On the cognitive level, both Varvara and Eve have developed representations of past and future. Nevertheless, only Varvara uses past and future forms productively. The varying rates of the acquisition of finiteness and aspect by Varvara and Eve are likely to be the result of differences in the nature of tense and aspect in Russian and English. The fact that temporal reference in Varvara's and Eve's non-finite forms differs is due to the different nature of English bare verb forms as compared to Russian infinitival verb forms. Following Giorgi & Pianesi (1997) who claim that the English bare verb is not a true morphological infinitive and is inherently perfective, as compared to infinitives in Dutch, Greek, and Russian (cf. Hyams 2000), we would expect that the Eventivity Constraint and the Modal Reference Effect formulated in section 3, apply to Russian infinitives, but not to English bare forms.

The expectation that Russian RIs will almost exclusively be used with eventive verbs, as opposed to RIs in child English, is borne out by the data. Eve's RIs occur both as eventive and non-eventive verbs, whereas Varvara's RIs are mostly represented by eventive verbs. In accordance with the Modal Reference Effect, the temporal reference of Varvara's RIs is predominantly future. Eve's non-finite forms, on the other hand, appear to be compatible with a wide range of temporal references: present, past, and future.

To conclude so far, as predictions 2 and 7 are not borne out, the Language Specificity hypothesis cannot be discarded.

Additional evidence in favour of the Language Specificity hypothesis comes from the predictions considered above for the first two hypotheses. Both prediction 1 (early reference to non-resultative past and non-immediate future events before the appearance of morphology) and

5 (earlier appearance of aspectual markers in Russian than in English through the Transparency Principle), are borne out, thus further supporting the Language Specificity hypothesis.

As for prediction 6 (target-like usage of forms), it is borne out by the data. Finite forms used by Varvara and Eve are predominantly correct. Very few exceptions from the target-like use of forms (e.g. errors of substitution of the auxiliary *be* with *do*, etc.) can possibly be explained in terms of performance difficulties that both Varvara and Eve experience in the course of acquisition. We assume that target-like word order can be used as additional evidence in favour of the Language Specificity hypothesis. We observed that Eve follows a fixed SVO order in the majority of her utterances. There are very few instances of the SOV and VOS orders in her data. In Varvara's data, more variation with respect to word order is observed: both OV- and VO-orders are present in her files. Thus, both the Russian child and her English counterpart follow the word order which is characteristic of their target languages. Exceptions to this target-like pattern are very few in their data.

As additional evidence in favour of this hypothesis, prediction 3 appeared to be irrelevant for the Russian child data: *processes* are not marked differently from *states* in Varvara's data, as there is no such morphological distinction between these two types of events in adult Russian.

Prediction 4 (stating that *processes* should be marked differently from *results*, and that telic events in general, should be marked differently from atelic events) is expected to be true for all the three hypotheses. As mentioned above, the three hypotheses have a different explanation for this prediction. Thus, finding out whether prediction 4 is borne out or not is invalid for the purposes of this study, as it cannot be used to support or reject any of the three hypotheses individually.

The question is whether we can fully discard the other two hypotheses on the basis of the evidence obtained through our cross-linguistic analysis. Evidence against the Cognition hypothesis presented in 4.1. is conclusive enough and allows us to reject this hypothesis. First of all, reference to non-immediate past occurs in child data. Second, finite verb forms used by Varvara and Eve are predominantly target-like. Non-target-like forms can be attributed to performance and not to competence difficulties.

To find out whether we can reject the Semantic Predisposition hypothesis we need to look more closely at the evidence that supports it to see whether this evidence can be explained in terms of language specificity.

One of the crucial phenomena that support the Semantic Predisposition hypothesis comes from the use of root infinitives. As we said above, these constructions are possible in adult language and that is why they should be allowed in child language as well. However, children are not using them in the contexts in which adult RIs typically occur (newspaper headlines, “Princess” sentences, etc.). Thus in this respect children’s use of RIs is not target-like. I assume that before the age of two, children have had access to these constructions in adult language and that is why these constructions are expected to occur in their earliest data. At the same time, children have difficulties in limiting the contexts in which RIs should occur.

When looking at differences in temporal references of non-finite forms in child Russian and child English, I found that these can best be explained in terms of language specificity, since the nature of the English bare verb differs from that of the Russian infinitive.

Thus the Language Specificity hypothesis appears to have the most reassuring evidence in its favour.

5. Conclusion

To conclude, it was found that there are both similarities and differences in the way children acquire tense and aspect in Russian and English. The semantic and syntactic properties of Russian and English aspect that are language-specific play a crucial role in the process of acquiring Russian versus English verb morphology at an early stage. Varvara and Eve do not use past tenses with telic verbs only. Atelic verbs are used in the past form and telic verbs occur in the present tense. Aspectual and temporal reference of RIs as well as their proportion (compared to finite forms) appeared to be different across the two languages, thus further supporting the Language Specificity hypothesis. I conclude that the different rates in the acquisition of tense and aspect by Russian and English learners are due to the specific morpho-syntactic properties of tense and aspect in Russian and English. In addition, the predominant use of target-like forms provides a strong confirmation of the language-specific acquisition of finite morphology.

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